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THE PAC-TYPE FAST PATROL BOAT OF DEGGENDORFER WERFT UND  
EISENBAU GMBH (DE..(U) NAVAL INTELLIGENCE SUPPORT  
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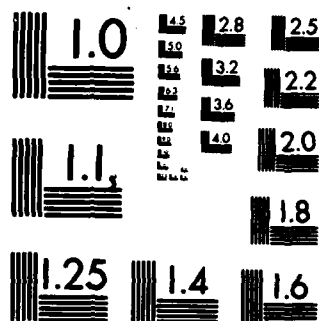
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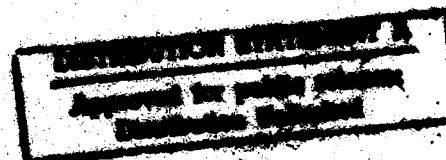
TITLE: THE PAC-TYPE FAST PATROL BOAT OF  
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AUTHOR: H. FOCK

TRANSLATED BY: LT DAN PETERS, USNR-R  
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THE PAC-TYPE FAST PATROL BOAT OF DEGGENDORFER  
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[Fock, H.; Der Schnellboot-Type PAC der Deggenborfer Werft und Eisenbau GmbH; Marine-Rundschau, No. 7, 1982, pp. 379-381; German]

The years of generally unsatisfactory conditions in civilian ship construction, the takeover of yards which closed down, and the growing interest worldwide in warships of smaller and mid-range tonnage has resulted recently in a commitment to warship or special-ship construction by yards which, until now, had not entered this market at all or only to a limited degree. This holds true for the German yards, for large business, such as Bremer Vulcan, which on the basis of experience with frigate construction for the German Navy developed a number of interesting frigate and corvette designs, as well as for the smaller inland shipyards like Deggenborfer Werft und Eisenbau GmbH (DWE), which belongs to the Gute-Hoffnungshuette concern.

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In the 1950s to 1980s, there have emerged a number of small warships which the Deggenborfer yard can use today as a reference list, partially in cooperation with the Oberwinter Shipyard and partially with the former Ruthof Shipyard, whose know-how was purchased by the Deggenborfer Shipyard:

- an auxiliary for the French Navy (75.0 x 9.5 m, 830 t)
- 16 landing ships for Saudi Arabia (64.25/54.5 x 12 m, 400 t)
- 10 landing craft for Zaire (35/25 x 11.7/7.7 m, 35 t)
- 2 landing craft for the French Navy (25 x 7.3 m, 30 t)
- 30 landing craft for Egypt (8.5 m length)
- 2 patrol boats for the Ghanaian Navy (35.6 x 6.5 x 1.75 m, 152/170 t, 31 kn (DELA Class))
- 2 patrol boats for the French Navy (40 x 7.6 x 1.65 m, 184 t, 25 kn), one of which today sails with the Singapore Navy under the name ENDEAVOUR.
- a hydrofoil for the German water police (10 x 2.5 x 1.5/.55 m, 35 kn).

From 1975 on, DWE developed its own activities in conjunction with another similarly engaged German shipyard. Thus arose several conventional patrol and fast patrol boat designs (see Soldat und Technik, No. 5, 1981 and Marine-Rundschau, No. 9, 1979). These indeed made an overall well-thought-out and smooth impression. Nevertheless, the all-too-well-known conclusion soon had to be drawn that it is not easy for a "newcomer" to penetrate this

\*Numbers in right margin indicate pagination in original text.

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closed market of famous yards similarly engaged for years and decades with an internationally widely diversified and very extensive product line.

After ongoing studies of existing boat types and general trends, the company began at once in August 1978 to concern itself with an "unconventional" type and to subject it to intensive resistance model testing, to investigate special resistance characteristics. In order to use the relatively simple glider (V) form, but at the same time to exclude its seakeeping defects, a deep V-form with double keels in the forecastle area (PES = Planing Effect Ship), was developed after four years of work. This should give the boat /380 better seakeeping abilities in comparison to those on the market employing V-frame construction. It received the German patent No. DE 2928634C3.

On the basis of this boat form, two designs arose, type PAC 37 and PAC 47, for which a market is envisaged in the newer navies of Africa and Southeast Asia as a predominant marketing area. The first market should be more profitable, since the Southeast Asian area is already covered in part through subsidiaries or licenses respectively of known European and North American manufacturers (Luerssen, Vosper-Thornycroft, Tacoma Boatbuilding Co.).

The PAC 37 type, already developed in final form, at present has the following technical characteristics:

-Length overall	37.5 m
-Length on waterline	32.6 m
-Molded beam	10.5 m
-Molded depth	4.4 m
-Draft without propeller	1.9 m
-Draft with propeller	3.22 m
-Displacement	app. 270 t

A broad spectrum of variable-output MTU diesels is offered as propulsion. These diesels, which are placed side-by-side in an afterbody section, drive a beveled Z-gear on a three-bladed, fixed propeller:

-3 x MTU 12V538TB91 = 3 x 2,750-hp = 8,250 ehp = ca 15 kn
-3 x MTU 12V538TB92 = 3 x 3,060-hp = 9,180 ehp = ca 19 kn
-3 x MTU 16V538TB91 = 3 x 3,660-hp = 10,980 ehp = ca 28 kn
-3 x MTU 16V538TB92 = 3 x 4,060-hp = 12,240 ehp = ca 32 kn
-3 x MTU 20V538TB91 = 3 x 4,580-hp = 13,740 ehp = ca 36.5 kn
-3 x MTU 20V538TB92 = 3 x 5,100-hp = 15,300 ehp = ca 40 kn

In each case sea trial displacement is 240 t (with 50% stores onboard). A waterjet propulsion system can be provided for use in shallow waters.

In addition, the armament--in keeping with the customer's wishes--can be installed in the FPB as well as the FAC versions, in very diverse ways.

The following alternatives are offered:

1. for the FPB version:

a) on the forecastle

-one 35-mm Oerlikon twin

-one 40-mm Bofors

-one 40-mm Breda twin

-one 57-mm Bofors

-one 76-mm OT0-Melara

b) on the quarterdeck

-one 35-mm Oerlikon twin

-one 40-mm Bofors

-one 40-mm Breda twin

-one 80-105 on-board  
helicopter

c) on the bridge deck

-two 20-mm Oerlikon

-two 30-mm Oerlikon twin

2. for the FAC version:

a) on the forecastle

-one 40-mm Breda twin

-one 57-mm Bofors

-one 76-mm OT0-Melara

b) on the quarterdeck

-one 40-mm Bofors

-one 40-mm Breda twin

-one 57-mm Bofors

-one 76-mm OT0-Melara

c) on the bridge deck

-two 20-mm Oerlikon

-two 30-mm Oerlikon twin

d) missiles: 2 twin ECOCET  
MM 40s, HARPOON, OTOMAT,  
SEA DART, as well as DAGAIE  
for self-protection.

e) Antiship torpedoes: AEG  
Telefunken SS t 4

f) as ASW version: AEG  
Telefunken SUT or 2 triple  
Mk 32s, as well as sonar gear.

Deggendorfer Werft und Eisenbau GmbH cooperates with Hollandse Signaalapparaten (GEMINI type) in electronics and fire-control systems, and with BBC and MWM in Mannheim (two diesel generators) in electrical power supply.

The larger type PAC 47, planned only as an FAC, has been thoroughly studied in prototype. The present technical characteristics are:

-Length overall	47.55 m
-Length on waterline	42.60 m
-Molded beam	10.50 m
-Molded depth	4.80 m
-Draft (fully loaded)	ca. 2.27 m
-Displacement (fully loaded)	ca. 440 t

The propulsion and armament alternatives correspond to the type PAC 37.

The yard expects much from the new design, similar to the SAR Class of the Abeking and Rasmussen Company (see Marine-Rundschau, No. 4, 1982):

- a very stable weapons platform,
- high operational speed, even in heavy seas,
- short shopping distance,
- small turning circle,
- superior stability values,
- comfortable living and accommodation provisions for crew, and functional spaces, since all living and operations spaces are concentrated amidships. All below-deck spaces are accessible via the amidships superstructure.

The broad weapons spectrum should enable the boat to be used as a combatant, as well as deployment for Coast Guard duty, fishery protection and offshore and economic zone surveillance (200-nm zone).

A crew of 26 is envisaged (including reserve accommodations for two officers and one enlisted).

The hull, fabricated in welded shipbuilding steel #42, is subdivided by five transverse bulkheads and two longitudinal bulkheads into light compartments:

Compartment 1: afterpeak, with rudder and two auxiliary machinery spaces, ammunition magazine, exhaust pipe and stowage space,

Compartment 2: Engine room and control room,

Compartment 3: Crew, mess and sanitation spaces,

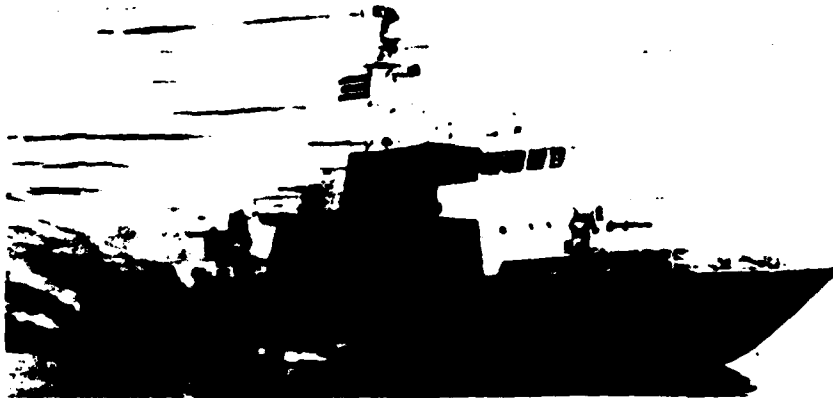
Compartment 4: Ammunition magazine, sanitary facilities,

Compartment 5: Stores,

Compartment 6: Forepeak, with two chain lockers.

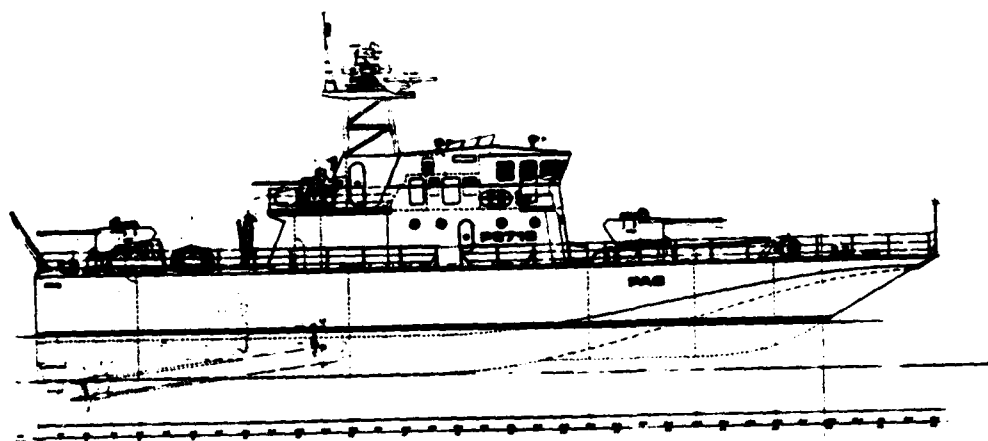
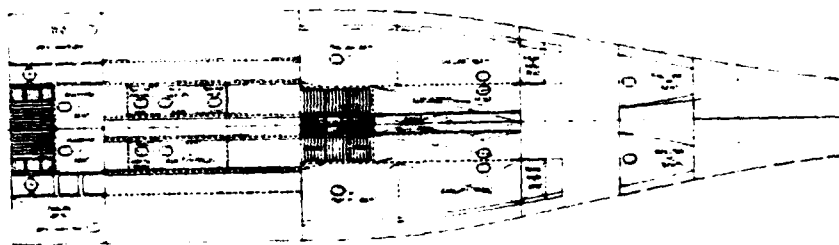
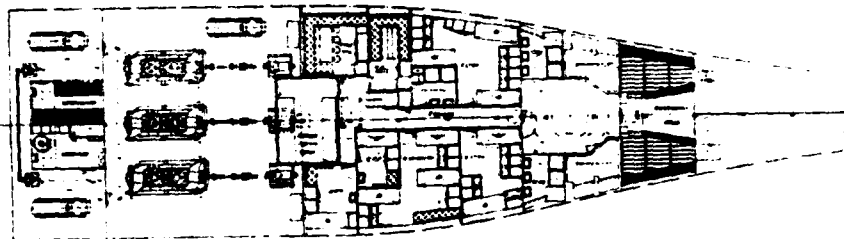
The superstructure is constructed of light-weight metals and is riveted to the hull. All structures are made of fireproof material.

Navigation, detection and communications equipment meet modern standards.



Photos of models of the PAC-type fast patrol boat





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